

FAIRVIEW NORTH (PWS #7100028) SOURCE WATER ASSESSMENT FINAL REPORT

October 11, 2001



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for Fairview North Elementary School*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Fairview North drinking water system consists of one well (PWS # 7110028) serving approximately 290 people through 1 service connection. A review of the Drinking Water Information Management System (DWIMS) provided information regarding the water quality for the Fairview North drinking water system. According to DWIMS, no volatile organic chemicals (VOCs), synthetic organic chemicals (SOCs), or microbial contaminants were detected in samples collected from the Fairview North well water.

In August 1999, arsenic was detected in a water sample collected from the Fairview North well at a concentration of 0.007 milligrams per liter (mg/l). This single detection of arsenic is well below the current Maximum Contaminant Level (MCL) for arsenic of 0.05 mg/l. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates.

In April 1995 and again in August 1999, fluoride was detected in two water samples collected from the Fairview North well at concentrations of 0.36 mg/l and 0.33 mg/l, respectively. These detections are far below the MCL for fluoride of 4.0 mg/l. The inorganic chemicals (IOCs), arsenic and fluoride, may be naturally occurring in the formations in which the well was developed.

From September 1993 to September 2000, nitrate was detected in seven water samples collected from the Fairview North well at concentrations ranging from 1.97 to 2.45 mg/l, far below the MCL for nitrate of 10 mg/l. In terms of total susceptibility, the Fairview North well water rates high for susceptibility to potential IOC, VOC, SOC, and microbial contamination. This is due to unknown well construction properties, aquifer properties, agricultural land use in the area, and the presence of potential sources of contamination in the source water assessment.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

If concentrations of arsenic, fluoride, or nitrates in the well water increase, there are several different systems available that Fairview North should look into, including ion exchange, reverse osmosis, or activated alumina that can be effective in treating these chemicals. Any spills from the potential sources of contamination identified in Table 1 of this report should be carefully monitored. Other practices aimed at reducing the leaching of manure and farm chemicals from agricultural land within the designated source water areas should be implemented.

Most of the designated areas are outside the direct jurisdiction of Fairview North. Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR FAIRVIEW NORTH, BONNEVILLE COUNTY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Fairview North drinking water system is a non-community, non-transient system serving approximately 290 people through 1 service connection. The Fairview North drinking water system is comprised of one groundwater well located west of Ucon and Highway 26 and north of Idaho Falls (Figure 1).

The only recorded water chemistry issues facing the Fairview North well are the presence of low concentrations, far below the current MCLs, of arsenic, fluoride, and nitrates in the well water. In August 1999, a single detection of arsenic was recorded in a water sample collected from the Fairview North well at a concentration far below the current MCL. In April 1995 and again in August 1999, fluoride was detected in two water samples collected from the Fairview North well at concentrations well below the respective MCLs for fluoride. The IOCs, arsenic and fluoride may be naturally occurring in the formations in which the well was developed. From September 1993 to September 2000, nitrate was detected in seven water samples collected from the Fairview North well at concentrations ranging from approximately 20% to 25% of the MCL for nitrate, 10 mg/l.

Defining the Zones of Contribution--Delineation

The Eastern Snake River Plain is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with sedimentary rocks along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt. The plain is bounded on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. These rocks may also underlie the plain (Garabedian, 1992, p. 5). Granite of the Idaho batholith borders the plain to the northwest along with sedimentary and metamorphic rocks (Cosgrove et al., 1999, p. 10). The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. A high degree of connectivity with the regional aquifer system is displayed over much of the river as it passes through the plain.

The Fairview North well is likely located in the layered basalts of the Snake River Group. The basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally by interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) and Lindholm (1996, p.1) report that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center of the plain. Aquifer thickness varies from 200 to 3,000 feet in models of the regional aquifer, depending on location.

Regional ground-water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; DeSonneville, 1972, p. 78; Garabedian, 1992, p. 48; Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 ft/mile and average 12 ft/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations. The majority of aquifer recharge results from surface water irrigation activities, which divert water from the Snake River and its tributaries

(Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

Aquifer discharge occurs primarily as seeps and springs on the northern wall of the Snake River Canyon at Thousand Springs, and near American Falls and Blackfoot. To a lesser degree, discharge also occurs through pumping and underflow (Garabedian, 1992, p. 17).

Annual average precipitation in the area is estimated at 10 inches (Kjelstrom, 1995, p. 3). An estimated 2 inches per year enters the aquifer as recharge from precipitation (Garabedian, 1992, p. 20). Seasonal water table fluctuations in excess of 20 feet have been recorded in response to irrigation seepage and canal leakage (see Table 4). Kjelstrom (1995, p. 13) reports river losses of 120,000 acre-feet to the aquifer for the Heise to Lorenzo reach of the Snake River and 280,000 acre-feet for the Lewisville to Shelley reach during the 1980 water year.

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time of travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International used a refined computer model (WHAEM) approved by the EPA in determining the source water assessment area (capture zone) for water associated with the Eastern Snake River Plain aquifer in the vicinity of Idaho Falls. The computer model used site- specific data, assimilated by Washington Group, International from a variety of sources including local area well logs. The delineated source water assessment area for Fairview North can best be described as a corridor 0.25-miles wide around the wellhead to 1.6 miles wide at the furthest extent of the delineation, 14 miles to the northeast. The delineated capture zone runs into the Snake River within the 3-year time of travel (TOT) zone. Since the 3-year time of travel runs into the Snake River, WHAEM cannot compute the 6-year and 10-year TOT zones. Surface water loss from the Snake River is the main source of groundwater recharge in the vicinity of the Fairview North well.

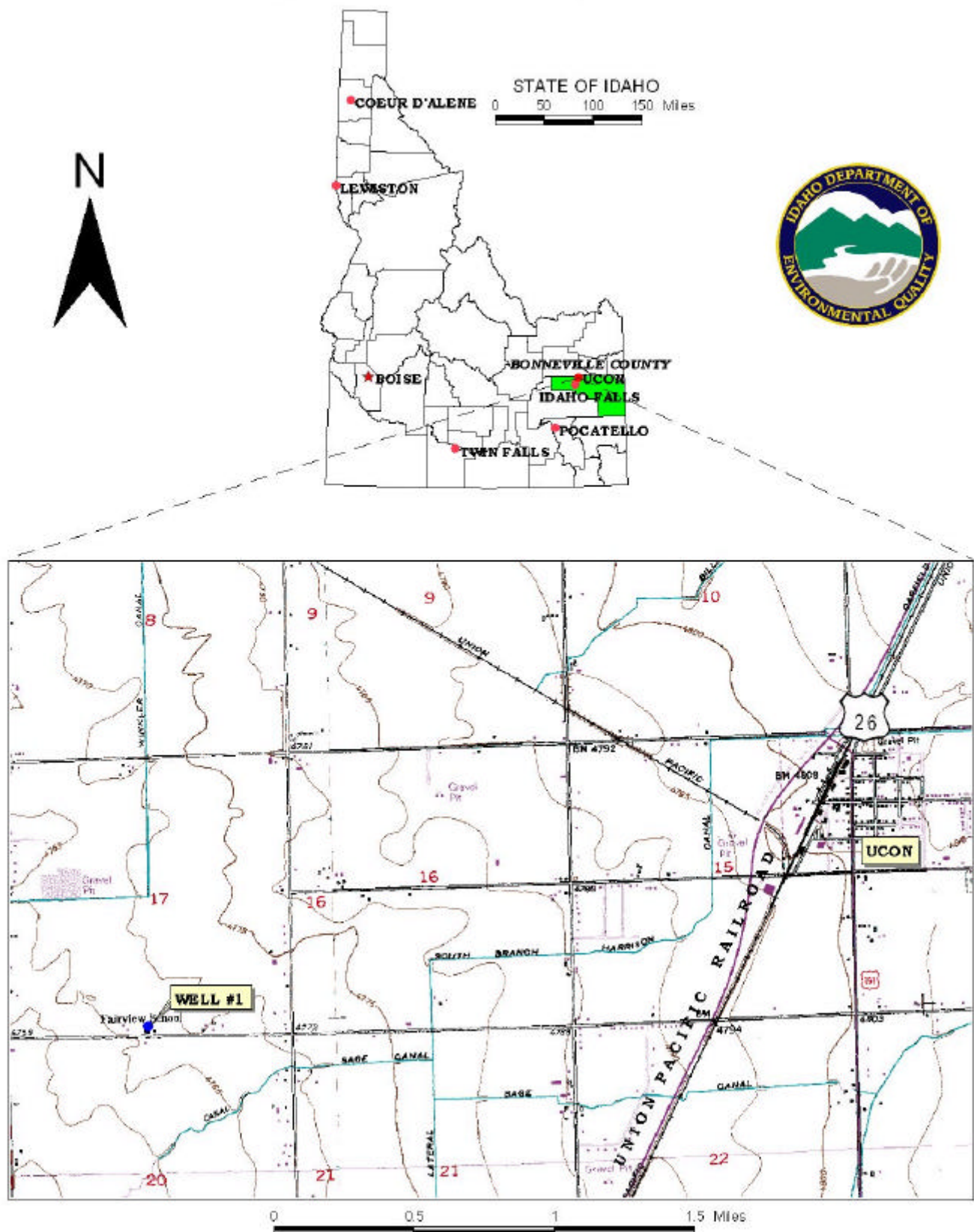
The actual data used by Washington Group, International in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside Fairview North is irrigated agriculture. Land use within the immediate area of the wellhead consists of residential property and irrigated agriculture.

FIGURE 1. Geographic Location of Fairview North



It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during April of 2001. This involved identifying and documenting potential contaminant sources within the Fairview North Source Water Assessment Area through the use of computer databases and Geographic Information System maps developed by DEQ.

Fairview North has a delineated source water assessment area that contains eleven potential contaminant sources and is crossed by the Snake River, Highway 26, and the Union Pacific Railroad (Table 1, Figure 2). Table 1 lists the potential contaminant sources and the types of potential contaminants found at each site. Highway 26 and the Union Pacific Railroad are potential sources of contamination because they are transportation corridors. Accidental releases of contaminants on the highway or the railroad, within the source water assessment area, could spill IOCs, VOCs, SOCs, or microbial contaminants on to the well-drained soil. These potential contaminants could migrate down through the fractured basalt in the vadose zone and possibly contaminate the Fairview North source water. Similarly, the Snake River is listed as a potential contaminant source because it is known to recharge the aquifer locally (Garabedian, 1992, p. 11). Consequently, if a spill occurs and the Snake River transports contaminants through the source water assessment area, contaminants could leach into the Fairview North source water.

Table 1. Fairview North Potential Contaminant Inventory

Site #	Source Description	TOT Zone ¹ (years)	Source of Information	Potential Contaminants ²
	Highway 26	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Snake River	0-3	GIS Map	IOC, VOC, SOC, Microbes
1	General Contractor, UST Site, Open	0-3	Database Search	IOC, VOC, SOC
2	Farm, UST Site, Open	0-3	Database Search	IOC, VOC, SOC
3	Farm, UST Site, Open	0-3	Database Search	IOC, VOC, SOC
4	< 200 Cows	0-3	Database Search	IOC, Microbes
5	< 200 Cows	0-3	Database Search	IOC, Microbes
6	Roofing Contractor	0-3	Database Search	IOC, VOC, SOC
7	Automobile Repair and Service	0-3	Database Search	IOC, VOC, SOC
8	Concrete Contractors	0-3	Database Search	IOC, VOC, SOC
9	Wreckers/Dealers	0-3	Database Search	IOC, VOC, SOC
10	Fertilizers, Wholesale	0-3	Database Search	IOC, VOC, SOC
11	Recharge Site, Unused	0-3	Database Search	IOC, VOC, SOC, Microbes

¹ TOT = time of travel (in years) for a potential contaminant to reach the wellhead

² IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

³ UST = Underground Storage Tank

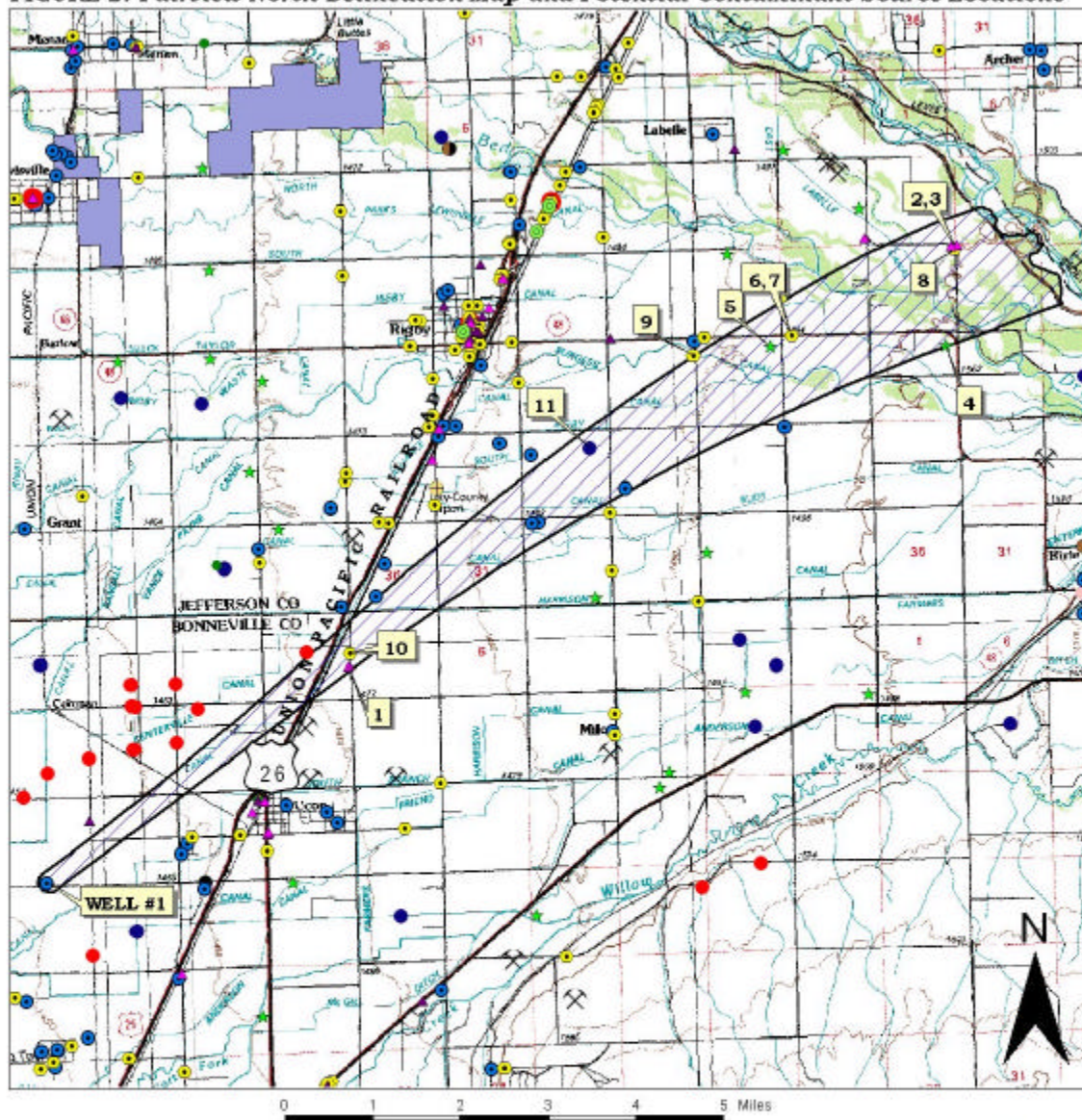
Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity is high for the well (see Table 2). This reflects the nature of the soils being in the well-drained to moderately-drained class, the vadose zone (zone from land surface to the water table) being comprised predominantly of fractured basalt, and locally shallow ground water. All of these factors combine to make the well susceptible to potential contaminants. According to local area well logs, it is unlikely that the Fairview North well contains at least 50 cumulative feet of low permeability units that could retard downward movement of contaminants.

FIGURE 2. Fairview North Delineation Map and Potential Contaminant Source Locations



PWS# 7100028
WELL #1

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The Fairview North drinking water system consists of one well that extracts ground water for academic uses. The well system construction score is moderate for the well primarily because of the lack of a construction well log. Without a well log no determination can be made as to whether or not the well meets current Idaho Department of Water Resources *Well Construction Standards and Rules*. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. The 1998 Sanitary Survey noted that the system was in substantial compliance with design standards for public drinking water systems. A 1993 Sanitary Survey noted that the system lacked a back-flow prevention device between the irrigation system and the drinking water system.

Potential Contaminant Source and Land Use

The well rates moderate for IOCs (i.e. arsenic, nitrate), VOCs (i.e. petroleum products), and microbial contaminants (i.e. bacteria). Agricultural land use in the delineated source area, high county-wide farm chemical use, and the presence of multiple potential sources of contamination in the 3-year time of travel zone contribute the largest number of points to the contaminant inventory rating. The well rates high for SOC (i.e. pesticides), due to the presence of an organics priority area for pesticides in the delineated zone, along with the land uses that contribute to the moderate rankings for the other contaminants.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. The Fairview North well scores high for hydrologic sensitivity and moderate for well construction. The presence of multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and agricultural land use contribute greatly to the overall ranking. As a result, the well rates high for susceptibility to potential IOC, VOC, SOC, and microbial contaminants.

Table 2. Summary of Fairview North Susceptibility Evaluation

Table 2. Summary of an AECOM Final Susceptibility Evaluation										
Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	M	M	H	M	M	H	H	H	H

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

The high total susceptibility ratings to potential IOC, VOC, SOC, and microbial contaminants for the Fairview North well water are due mainly to aquifer properties, unknown well construction properties, agricultural land use, and presence of multiple potential sources of contamination in the source water assessment area. The only recorded water chemistry issues facing the Fairview North well are the presence of low concentrations, far below the current MCLs, of arsenic, fluoride, and nitrates in the well water. The IOCs, arsenic and fluoride, may be naturally occurring in the formations in which the well was developed.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. If concentrations of arsenic, fluoride, or nitrates in the well water increase, there are several water treatment methods available in the market that Fairview North could look into, including: ion exchange, reverse osmosis, or activated alumina. All of these systems can be used effectively to treat for these chemicals. Fairview North should also install a back-flow prevention device on the irrigation system, if one is not currently in place, to prevent contamination of the drinking water.

For Fairview North, source water protection activities should focus on monitoring any spills from Highway 26, the Snake River, or any of the potential contaminant sources listed in Table 1 of this report. Other practices aimed at reducing the leaching of manure and other farm chemicals from agricultural land within the designated source water areas should be implemented. Most of the designated areas are outside the direct jurisdiction of Fairview North. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to the success of a source water protection program. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Any new PWS well should meet the *Recommended Standards for Water Works* (1997) as outlined in IDAPA 37.03.09 and IDAPA 58.01.08.550. Water should be taken from beneath a confining clay layer since the upper aquifer has a higher potential for becoming contaminated.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Attachment A

Fairview North Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- ≥ 13 High Susceptibility

1. System Construction

SCORE

Drill Date	1/1/1901	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1998
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score VOC Score SOC Score Microbial Score

Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	9	9	9	3
(Score = # Sources X 2) 8 Points Maximum		8	8	8	6
Sources of Class II or III leacheable contaminants or	YES	9	5	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	10

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0

Cumulative Potential Contaminant / Land Use Score	20	18	22	12
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4. Final Susceptibility Source Score

14 14 14 14

5. Final Well Ranking

High High High High